CLAIMS

1. A heat resistance copper alloy material characterized in that said copper alloy material comprises 0.15 to 0.33 mass percent of Co, 0.041 to 0.089 mass percent of P, 0.02 to 0.25 mass percent of Sn, 0.01 to 0.40 mass percent of Zn and the remaining mass percent of Cu and inevitable impurities, wherein each content of Co, P, Sn and Zn satisfies the relationships $2.4 \leqq ([Co] - 0.02) / [P] \leqq 5.2$ and $0.20 \leqq [Co] + 0.5 [P] + 0.9 [Sn] + 0.1 [Zn] \leqq 0.54$, wherein [Co], [P], [Sn] and [Zn] are said mass percents of Co, P, Sn and Zn content, respectively; and said copper alloy material is a pipe, plate, bar, wire or worked material obtained by working said pipe, plate, bar or wire material into predetermined shapes.

2. A heat resistance copper alloy material characterized in that said copper alloy material comprises 0.11 to 0.31 mass percent of Co, 0.041 to 0.089 mass percent of P, 0.02 to 0.25 mass percent of Sn, 0.01 to 0.40 mass percent of Zn, 0.01 to 0.17 mass percent of Ni and/or 0.01 to 0.15 mass percent of Fe and the remaining mass percent of Cu and inevitable impurities, wherein each content of Co, P, Sn, Zn, Ni and Fe satisfies the relationships $2.4 \leqq ([Co] + 0.8 [Ni] + 0.8 [Fe] - 0.02) / [P] \leqq 5.2$, $0.20 \leqq [Co] + 0.5 [P] + 0.9 [Sn] + 0.1 [Zn] + 0.9 [Ni] + 1.5 [Fe] \leqq 0.54$, $0.15 \leqq [Co] + 0.8 [Ni] + 0.8 [Fe] \leqq 0.35$, $1.2 [Ni] < [Co]$, $1.5 [Fe] < [Co]$ and $[Ni] + [Fe] < [Co]$, wherein [Co], [P], [Sn], [Zn], [Ni] and [Fe] are said mass percents of Co, P, Sn, Zn, Ni and Fe content, respectively; and said copper alloy material is a pipe, plate, bar, wire or worked material obtained by working said pipe, plate, bar or wire material into predetermined shapes.

3. The heat resistance copper alloy material according to Claim 1, further comprising 0.01 to 0.20 mass percent of Mn or 0.001 to 0.10 mass percent of Mg, Zr or Y, wherein each content of Mn, Mg, Y, Zr and said additive elements satisfies the relationship $0.20 \leqq [Co] + 0.5 [P] + 0.9 [Sn] + 0.1 [Zn] + 0.9 [Ni] + 1.5 [Fe] + [Mn] + [Mg] + [Y] + 3 [Zr] \leqq 0.54$, wherein [Mn], [Mg], [Y] and [Zr] are said mass percents of Mn, Mg, Y and Zr content, respectively.

4. The heat resistance copper alloy material according to Claim 2, further comprising 0.01 to 0.20 mass percent of Mn or 0.001 to 0.10 mass percent of Mg, Zr or Y, wherein each content of Mn, Mg, Y, Zr and said added elements satisfies the relationship $0.20 \leqq [Co] + 0.5 [P] + 0.9 [Sn] + 0.1 [Zn] + 0.9 [Ni] + 1.5 [Fe] + [Mn] + [Mg] + [Y] + 3$

[Zr] $\leqq$ 0.54, wherein [Mn], [Mg], [Y] and [Zr] are said mass percents of Mn, Mg, Y and Zr content, respectively.

5. The heat resistance copper alloy material according to any one of Claims 1 through 4, wherein content of oxygen as said inevitable impurity is less than or equal to 0.0070 mass percent.

6. The heat resistance copper alloy material according to any one of Claims 1 through 4, wherein 0.2% proof stress is higher than or equal to 55 N/mm^2 after a brazing treatment or a heat treatment under the same condition as said brazing treatment.

7. The heat resistance copper alloy material according to any one of Claims 1 through 4, wherein a furnace cooling of said copper alloy material is performed after a brazing treatment or a heat treatment under the same condition as said brazing treatment, and the thermal conductivity is raised by cooling from 670 ℃ to 480 ℃ with a cooling rate of 1.5 to 12 ℃/min in said furnace cooling process.

8. The heat resistance copper alloy material according to any one of Claims 1 through 4, wherein a furnace cooling of said copper alloy material is performed after a brazing treatment or a heat treatment under the same condition as said brazing treatment, and the thermal conductivity is raised by performing re-heating treatment in which said copper alloy material is heated under conditions with temperature of 480 ℃ to 670 ℃ for 3 to 100 minutes before or after said furnace cooling process has been finished.

9. The heat resistance copper alloy material according to any one of Claims 1 through 4, wherein said copper alloy material is quenched after a brazing treatment or a heat treatment under the same condition as said brazing treatment, and the thermal conductivity and strength are raised by performing re-heating treatment in which said copper alloy material is heated under conditions with temperature of 480 ℃ to 670 ℃ for 3 to 100 minutes after said quenching has been finished.

10. The heat resistance copper alloy material according to any one of Claims 1 through 4, wherein said copper alloy material is a pipe, plate, bar, wire or worked material obtained by working said pipe, plate, bar or wire material into predetermined shapes to be brazed.

11. The heat resistance copper alloy material according to Claim 10, wherein said copper alloy material is a seamless copper alloy tube or a welded copper alloy tube to be used as a heat exchanger tube or a piping tube of a heat exchanger.

12. The heat resistance copper alloy material according to Claim 10, wherein said copper alloy material is a seamless copper alloy tube or a welded copper tube composing a heat exchanger tube or a piping tube of a heat exchanger using a heat medium gas aside from HCFC system fluorocarbon.

13. The heat resistance copper alloy material according to Claim 10, wherein said copper alloy material is a plate part in a heat exchanger or a plate used as a component of connecting plate which couples said plate part with said heat exchanger tube or other plate parts.